The pictogram of the pes planus from the first century AD

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Abstract

Purpose This study presents a pictogram engraved into the Marble Road of the ancient town of Ephesus, with a special emphasis on one part of it which represents a flat foot. Although the flat foot is a widespread and common disturbance in all time periods, we were motivated by a lack of its representation within iconographical, historical or other sources.

Method Aiming to confirm the diagnosis objectively we applied the modern diagnostic methodology, arch index (AI). The result was 0.33, which is a mathematical proof that the Ephesus foot is definitely flat.

Conclusion To the best of our knowledge, this picture from the first century AD is among the oldest representations of a flat foot in history.

Archaeological finds throughout the world testify of the human use of graphic symbols, sometimes very similar to letters, in order to preserve the memory of significant moments in their daily lives. The most frequently used signs are simplified pictures of objects—pictograms. The Sumerian, Egyptian and Chinese alphabets originate from such pictogram systems [1].

This paper presents a pictogram engraved into the Marble Road of the ancient town of Ephesus, with a special emphasis on one part of it which represents a flat foot. We were motivated by a lack of representation of flat foot within iconographical, historical or other sources, although the flat foot is a widespread and common disturbance in all time periods. Perhaps this paper could encourage similar insights of its spread throughout history.

Ephesus is an ancient city on the coast of Ionia, near present-day Selçuk, Izmir Province, Turkey. It was one of the 12 cities of the Ionian League during the Classical Greek era. In the Roman period, Ephesus had a population of more than 250,000 in the first century BC, which served to make it one of the largest cities in the Mediterranean world. The city was famed for the Temple of Artemis (completed around 550 BC), one of the Seven Wonders of the Ancient World. Emperor Constantine I rebuilt much of the city and erected new public baths. Ephesus was also one of the seven churches of Asia that are cited in the Book of Revelation, the site of several fifth century Christian Councils, and the location of a large gladiators' graveyard. The Ephesians were rather liberal in their social relations, allowing strangers to integrate. Education was much valued, and through the cult of Artemis, the city also became a bastion of women's rights, and a place of female artists [2].

The Marble road was constructed in the first century AD. It leads to the great theatre and to the Celsus Library, as a portion of the sacred way that leads to the Temple of Artemis (Fig. 1). Its western side is enclosed by the agora wall, made up of a higher platform, constructed during the reign of Nero, and built over the wall, for pedestrians. There are busts and statues of the important people erected along the road, and the letters from emperors carved into the marble blocks for people to read [3].

The pictogram which attracted our attention was believed to be an advertisement of a brothel, situated at the angle of the Marble and Coureta streets. The brothel was a peristyle

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Fig. 1 The marble road

house where, during excavations, a statue of Priapus with an oversize phallus was found. The construction of the building dates to Emperor Trajan (98–117 AD). On the west side of the house was a reception area with coloured mosaics on the floor. It had two entrances from different sides of the road, and comprised a hall on both the first and the second floors with a number of small rooms.

The engraved pictogram which represents the road to the brothel, and advertises it at the same time, consists of three

Fig. 2 The pictogram from Ephesus

symbols: the left foot of an adult to the left, an engraved female head with bust to the right, and a pierced heart opposite the female figure (Fig. 2). The woman's figure symbolises the female waiting in the brothel and the heart indicates her eagerness for love. Tourist guides usually explain that one finger of the footprint is pointing to the library, while the other is showing the way to the brothel [4]. On this segment of the ancient city's Marble Road a direction was engraved for those who wanted to get to the library, but also to the brothel. These simple symbols illustrate the history of human desire for both the spiritual and the carnal, easily comprehensible to all the walkers on the Marble Road up to this day.

Our outlook of the present and the past is informed by the knowledge and world views we gained, and the professions we are engaged in. Due to these facts, what grabbed our attention while watching this ancient advertising composition was the print of the foot. Unlike the schematised drawing of the female bust and the heart, the rendition of the foot resembles an imprint or a very successful drawing. It is a realistic illustration of a flat left foot. From the tip of the toe to the heel, the foot is 239.5 mm long. However, that is not the longest part of the foot. The longest span is 250.5 mm, because the third toe is 11 mm longer than the big toe. The widest part of the foot is 112 mm, and the widest part of the heel is 57 mm. The length between the heel and the widest, distal part of the foot is 74 mm (Fig. 2). Adapted to current standards, the foot would fit the size 39/40 (European).

Fig. 3 The pictogram with measures (in colour)

The flat foot diagnosis has been confirmed by arch index (AI) calculation (Fig. 3), devised by Cavanagh and Rogers in 1987 [5]. The outline of an adult foot can quickly and with great certainty be determined using the AI measuring method and categorisation. Radiographic parameters such as talar height, navicular height obtained from standing weight-bearing lateral view X-ray of foot are accepted as yardsticks to predict the arch height, but procurement and processing the footprint is easier, cheaper and more acceptable for the patient. Hence, in spite of the fact that radiography is still important in establishing the arch height, footprint procedures are preferred [6, 7].

The arch index ($AI = B/A + B + C$) represents the proportion of the length of the median third of the foot imprint with regard to the overall length of the foot on an imprint, but without toes. The greater the proportion, the flatter the foot. The arch index is a highly reliable test and correlates with the height of the navicular bone and the measurement of angles on X-rays of the foot [6]. Depending on the AI results, feet can be divided into three categories—normal foot (0.21–0.28), high-arched foot (< 0.21) and low-arched, i.e. flat foot (> 0.28). When the AI formula is applied to the Ephesus foot, the results are as follows: $AI = B/A + B + C \rightarrow AI = 66.22\text{-mm}/198.88\text{ mm} = 0.33$. This is a mathematical proof that the Ephesus foot is definitely flat (Fig. 3).

Flat foot as a deformity is commonly encountered in daily medical practice. This anomaly has been present in all ethnic groups and in all epochs [8, 9]. From the modern day perspective it is difficult to speculate on the person whose foot is engraved in this ancient stone path. It may be supposed that it was probably a grown man (adapted to current standards, the foot would fit the size 39/40), perhaps a worker who was building the road, or an artist who made the engravings. It could have been made by the seafarers who came from the nearby port in search of some pleasure, or simply a foot of a local passer-by. It is an established fact that the causes of flat feet are numerous. At the adult arthritis also needs to be considered, either of inflammatory or degenerative nature, then trauma, either of the bones or of the soft tissue (which probably was not uncommon in ancient times), plus the neuropathically flattened foot due to a spinal cord injury and Charcot's atrophy [10].

The papers on flat feet from the standpoint of contemporary medicine or evolution are abundant in the medical literature [11]. On the other hand, historical medical texts or illustrations of flat feet are extremely rare. Retrospective diagnostics of pathologies in the past are questionable. In this case, though, the things are different. The imprint of the foot engraved in the road enables the application of modern diagnostic methodology (AI index) and objectively confirms the diagnosis. Besides, we are prone to believe that this picture from the first century AD is among the oldest representations of a flat foot in history.

Conclusions

The traditional approach to history based on accentuating the most outstanding political, military and cultural events is increasingly opposed by a more complete vision of the past through a sociological approach inspired by the fate of ordinary people and their daily lives. An ordinary everyday experience was recorded on this advertising sign engraved in the marble of the ancient Ephesus, i.e. a human foot with an arch lowered due to an unknown cause, and his owner's surge towards some of the socially significant spots: theatre, library and brothel.

The attempt to recreate the lives of the people from the past is based on the knowledge and interpretation of various historical sources. At times those sources are scarce or not even noted in the form of text, but cryptic or merely symbolic. This paper tries to interpret such symbolic messages preserved in an unusual location (a marble road), sketched graphically in the form of a rebus. Our interpretation of all included symbols is devoid of any other stronghold in written sources, and hence it is largely subjective. The generally accepted interpretation of the pictogram as an advertisement or a forerunner of a billboard is also uncertain. On the other hand, the representation of a foot is indubitable and solidly corroborates our standpoint that it is a rendition of a flat foot from the first century AD, which is at the same time the oldest known illustration of this particular pathology.

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